Software for Supply Chain Design and Analysis

- Optimize networks
- Improve product flow
- Position inventory
- Simulate service
- Balance production
- Refine routes
The Leading Supply Chain Design and Analysis Application

Ever ask yourself, ‘what if?’ Supply Chain Guru enables you to understand the answers through modeling, simulating and analyzing your supply chain network. You can design alternatives and explore the service, performance, costs and risks associated with change. All within a single integrated software platform.

Intuitive User Interface
Supply Chain Guru features the Visual Modeler to make network setup easy and intuitive. Project Navigator allows you to quickly move from scenario to scenario or model to model. Reporting is quick and easy, in a variety of maps, graphs and charts.

Supply Chain Intelligence Database
The system includes auto deployment of Microsoft® Access® or Microsoft SQL Server®. It holds product data, ESRI GIS reference data as well as attributes on demand, transportation, sourcing, inventory, and production. Pre-configured connectors make access to SAP transportation rate tables, or any enterprise data source easy and dynamic.

Design Engine
The Design Engine contains multiple integrated solvers — operations research algorithms — that perform network, product flow, cost-to-serve, and inventory and transportation optimizations as well as greenfield and demand analysis. Enterprise simulation allows designs to be simulated and validated under real world constraints.
Network Optimization
- MIP/LP solver engine runs natively on 32 and 64 bit systems
- Detailed costing and behavioral characteristics for all key supply chain elements
- Integer variables and step functions
- Multiple constraints for product flow, facility capacity, inventory, transportation
- Optimize production processes and identify optimal footprint
- Multi-time period analysis for long-term capital planning and short-term tactical planning

Multi-Echelon Inventory Modeling
- "Guaranteed service" algorithms for determining safety stock
- Incorporate capacity constraints and determine pre-build or pre-positioning inventory
- Calculations for in-process and in-transit inventory levels
- Demand analytic identifies variability by product and by location
- Segment key product attributes including velocity, margin, demand variability, demand quantity, cost, lead time, etc.
- Calculates numerous inventory strategies, including rQ, sS, and days of supply

Product Flowpath Optimization
- SKU-level MIP/LP optimization solver scales to handle all products in the supply chain
- Trade off transportation, replenishment, inventory, and cycle stock to determine lowest "total landed cost"
- Determine flow changes based on seasonality or capacity constraints

Greenhouse Gas Emissions Modeling
- Model emissions associated with transportation modes, facilities, and suppliers
- Benchmark emissions data by transportation mode
- Constrain optimization based on emissions
- Include offset prices and cost of carbon calculations

Discrete Event Simulation
- Simulation engine fulfills demand using an event calendar
- Probability distributions for all key time and quantity variables, such as demand, transportation time, sourcing lead time, production processes, etc.
- Scalable to handle thousands of SKUs
- Animates supply chain flows geographically

Data Integration, Data Editing and Error Checking
- Automated MS Excel import/export
- External data integration utility for ERP
- Real-time connection to external data sources
- Data filtering and batch editing
- Scenario generation utilities
- Error checking
- Data verification and error handling utilities
- Infeasibility detection and troubleshooting tool

Visualization and Reporting Tools
- Visual modeling and flowchart views of supply chain
- Global geo-coding capabilities including distance
- Greenfield site location algorithms
- Global satellite images or map views with configurable layers
- Pre-configured graphs and reporting, including: rolled up financials, production details, transportation details, product landed costs, and facility costs
- Ad-hoc reporting
- Configurable charts and graphs with access to all cost data
- Save "favorite" reports
- Publish reports to third-party reporting packages
- Push data to external data packages
Design and Optimize Your Supply Chain
Supplement Guru design solutions offer multiple options for finding hidden inefficiencies in the supply chain. Models contain SKU-level detail, run across multiple time periods, and incorporate end-to-end supply chain components, including transportation and sourcing costs and policies, network structure, inventory, service level, and operational details.

Model Different Inventory Options
LLamasoft’s inventory and capacity modeling enables analysts to create accurate models across all echelons of the supply chain, so the lowest-cost operation plan with minimum safety stock can be identified. You can also simulate operations to predict service rates, inventory levels, and site capacity constraints for any hypothetical supply chain structure.

Analyze Cost to Serve
Supply Chain Guru is adept at modeling all supply chain activities and costs incurred to fulfill customer demand. Pricing, inventory quantities, and distribution methods can be analyzed and adjusted. Supply chain executives gain insight into the cost-to-serve and margin-to-serve at the customer-SKU level for both existing and alternative networks.

Optimize Product Flow
Analyze how SKU-level products flow along transportation lanes, through distribution centers on to your customers. Supply Chain Guru can help you determine which products should be shipped via air, rail, or truck, and the appropriate distribution path to meet determined service levels while minimizing transportation costs.

Transportation Modeling
Take a holistic view when modeling alternate transportation options with key variables such as cost, time, capacity, and delivery parameters. Create optimal transportation plans based on total cost and service constraints. The system will also help determine the optimal number and location of transportation assets.

Sales and Operations Planning
S&OP can be a key driver for improving resource utilization and maximizing return on assets. Optimization of very large models can be performed quickly and easily, and S&OP is easily integrated with disparate data sources throughout your enterprise. With data streams linked directly to SAP, Oracle, custom databases, or spreadsheets, your S&OP solution is always current.
**Merger and Acquisition Rationalization**
Model competing supply chains, evaluate their relative strengths, examine alternative structures, optimize the proposed new network, and simulate multiple scenarios in order to predict the resulting financial and operational performance of a merged or divested enterprise. Transportation lanes, inventory strategies, and greenfield facility options can be optimized for a post-merger supply chain.

**Greenhouse Gas Emissions Analysis**
Calculate your supply chain’s carbon footprint, determine the most cost-effective network that will meet a user-defined GHG emissions cap or percent-reduction target while incorporating carbon offsets into calculations.

**Analyze Lowest Landed Cost**
Identify the lowest total landed cost for each product in the network—from suppliers through to end customers. Alternative demand scenarios can be evaluated to determine the sensitivity of different supply chain designs to demand forecast variability. These models also provide a unique product-flow optimization using our proprietary product decomposition algorithm, which enables the optimization of individual SKU flow-paths, even with thousands of individual part numbers.

**Risk Analysis and Contingency Planning**
Identify alternate sources, routes, transportation modes, or production processes that may be required during supply chain disruptions. Analysts can introduce disruptive events or supplier uncertainty into the model to get a better understanding of the robustness of their supply chain. The integrated simulation functionality identifies both physical and financial risks—or rewards—of various network scenarios by revealing the effects of irregular network capacity during short or long-term emergencies.

**Improve Your Strategic Sourcing**
Now you can define and quantify alternatives to support your business strategy. Cost vs. time, inventory vs. service, fixed costs vs. variable costs; Supply Chain Guru’s unique technology models the entire supply chain network to determine how sourcing decisions will affect business as a whole.
Transportation Routing Optimization (Configurable Option)

- Optimizes inbound and outbound multi-stop routes and daily routing and delivery schedule for periodic routes
- Can be fully-integrated component of Supply Chain Guru or used as a stand-alone product
- Leverages the advanced geocoding capabilities to display vehicle routing results in a visual, intuitive form
- Models can be driven from shipment history, optimization results, or demand
- Prevents incompatible products from being combined into the same route